(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 27 May 2004 (27.05.2004)

PCT

(10) International Publication Number WO 2004/043704 A1

- (51) International Patent Classification⁷: **B41M** 5/26, C09D 133/12, 129/04, 4/00, C08K 5/19, C03C 1/725
- (21) International Application Number:

PCT/GB2003/004894

(22) International Filing Date:

12 November 2003 (12.11.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

0226383.8 12 November 2002 (12.11.2002) GB 0317860.5 30 July 2003 (30.07.2003) GB

- (71) Applicant (for all designated States except US): SHER-WOOD TECHNOLOGY LIMITED [GB/GB]; Unit 3, Wheldon Road, Widnes, Cheshire WA8 8FW (GB).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): STUBBS, Brian [GB/GB]; Sherwood Technology Limited, Heathcoat Building, Nottingham Science & Technology Park, University Boulevard, Nottingham NG7 2QJ (GB).

- (74) Agent: GILL JENNINGS & EVERY; Broadgate House, 7 Eldon Street, London EC2M 7LH (GB).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: USE OF TRANSITION METAL COMPOUNDS IN IMAGEABLE COATINGS

(57) Abstract: A process for forming an image on a substrate, which comprises coating the substrate with an amine of molybdenum, tungsten or vanadium that changes colour on heating or irradiation as an aqueous dispersion or suspension or as a solution in an organic solvent. Also described is a coated substrate, wherein the coating is a substantially visible light-transparent layer comprising an amine compound of molybdenum, tungsten or vanadium, and a solution of said amine compound and a thermoplastic polymer or a photo-polymerisable monomer.



A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B41M5/26 C09D133/12
G03C1/725 CO9D129/04 C08K5/19 C09D4/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

Category °	ENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages	Relevant to daim No.
X	US 4 237 212 A (INOUE EIICHI ET AL) 2 December 1980 (1980-12-02) column 4, line 9 -column 5, line 14 examples 12,20	1,3-18
X	GB 1 565 469 A (DAINIPPON PRINTING CO LTD) 23 April 1980 (1980-04-23) page 3, line 23 - line 111 example 8	1,3-18
X	US 3 661 574 A (BREDOUX FRANCOIS-JEAN-MARIE ET AL) 9 May 1972 (1972-05-09) the whole document	1,3-18
	-/	

Further documents are listed in the continuation of box C.	Patent family members are listed in annex.
Special categories of cited documents: A document defining the general state of the art which is not considered to be of particular relevance E earlier document but published on or after the international filing date L document which may throw doubts on priority daim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) O document referring to an oral disclosure, use, exhibition or other means P document published prior to the international filing date but later than the priority date claimed	 *T* later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention. *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone. *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family
Date of the actual completion of the international search	Date of mailing of the international search report
30 March 2004	06/04/2004
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk	Authorized officer
Tel. (+31-70) 340-3016	Markham, R



Internat ,pplication No PCT/GB 03/04894

	TO DESCRIPTION OF THE PER EVANT	101/40 03/04034
C.(Continua Category °	ation) DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Calegory	Challott of document, with indication, whose appropriate, or more about passage	
X	PATENT ABSTRACTS OF JAPAN vol. 009, no. 187 (M-401), 3 August 1985 (1985-08-03) & JP 60 054888 A (DAINIPPON INSATSU KK), 29 March 1985 (1985-03-29) abstract	1,3-18
X	US 4 217 409 A (INOUE EIICHI ET AL) 12 August 1980 (1980-08-12) cited in the application column 2, line 29 -column 5, line 17 column 6, line 5 - line 64 examples 12,20	1,3-18
X	US 2 910 377 A (RICHARD OWEN) 27 October 1959 (1959-10-27) cited in the application example 10	2-15
X	US 3 028 255 A (RICHARD OWEN) 3 April 1962 (1962-04-03) cited in the application the whole document	2-15
A	PATENT ABSTRACTS OF JAPAN vol. 017, no. 664 (M-1523), 8 December 1993 (1993-12-08) & JP 05 221121 A (MITSUI PETROCHEM IND LTD), 31 August 1993 (1993-08-31) abstract	1,2,11, 16,17

Internet Application No PCT/GB 03/04894

Publication Patent family Publication Patent document cited in search report member(s) date date US 4237212 A 02-12-1980 JP 1058311 C 31-07-1981 JP 53023630 A 04-03-1978 JP 55051173 B 23-12-1980 2736098 A1 DE 23-02-1978 23-04-1980 GB 1565469 A JP 994047 C 22-04-1980 Α 23-04-1980 GB 1565469 JP 05-12-1978 53139523 A 54025413 B 28-08-1979 JP JP 31-07-1981 1058311 C 53023630 A 04-03-1978 JP 23-12-1980 JP 55051173 B DE 23-02-1978 2736098 A1 US 4217409 A 12-08-1980 US 4237212 A 02-12-1980 09-05-1972 BE 743234 A 28-05-1970 US 3661574 Α FR 1595319 A 08-06-1970 GB 1270159 A 12-04-1972 1760130 C 20-05-1993 JP 60054888 Α 29-03-1985 JP JP 4050199 B 13-08-1992 12-08-1980 JP 994047 C 22-04-1980 US 4217409 Α 05-12-1978 JP 53139523 A JP 54025413 B 28-08-1979 DE 2736098 A1 23-02-1978 1565469 A 23-04-1980 GB 558766 A US 2910377 27-10-1959 BE Α CH 364800 A 15-10-1962 DE 1193971 B 03-06-1965 DE 1232991 B 26-01-1967 1200724 A 23-12-1959 FR GB 866076 A 26-04-1961 NL 106780 C NL 218538 A US 3028255 A 03-04-1962 2910377 A 27-10-1959 US 3028255 Α 03-04-1962 US BE 558766 A 364800 A 15-10-1962 CH DE 1193971 B 03-06-1965 26-01-1967 DE 1232991 B FR 1200724 A 23-12-1959 26-04-1961 GB 866076 A 106780 C NL 218538 A NL JP 3174792 B2 11-06-2001 JP 05221121 Α 31-08-1993